

IN THE CLAIMS:

1. (Previously Presented) A method of logically erasing contents of a rewritable optical disc in response to an erase command, the rewritable optical disc being optically rewriteable and having a program area and a program memory area (PMA), the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the rewritable optical disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA in response to the erase command;

detecting and deleting all of the frames containing the track information from the PMA, thereby logically erasing all of the contents from the program area, and at the same time erasing from the PMA the frames containing the identification information; and

preserving the frames containing the identification information in the PMA in such a manner that the frames containing the identification information and erased from the PMA are rewritten to the PMA so that the rewritable optical disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the rewritable optical disc.

2. (Previously Presented) The method according to claim 1, wherein the step of preserving comprises preserving the frames containing the identification information at a predetermined leading section of the PMA.

3. (Canceled)

4. (Previously Presented) A method of logically erasing contents of a rewritable optical disc in response to an erase command, the rewritable optical disc being optically

rewriteable and having a program area and a program memory area (PMA), the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the rewritable optical disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA in response to the erase command;

detecting and deleting all of the frames containing the track information from the PMA, thereby logically erasing all of the contents from the program area;

preserving the frames containing the identification information in the PMA, so that the rewritable optical disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the rewritable optical disc; and

deleting the frames containing the identification information instead of preserving the frames containing the identification information when the identification information is incapable of identifying the rewritable optical disc.

5. (Previously Presented) The method according to claim 1, wherein the step of preserving comprises detecting when the identification information is composed of a code incapable of identifying the rewritable optical disc, and then rewriting the identification information from the code incapable of identifying the rewritable optical disc to a code capable of identifying the rewritable optical disc.

6. (Canceled)

7. (Canceled)

8. (Previously Presented) A method of logically erasing contents of a rewritable optical disc in response to an erase command, the rewritable optical disc being optically

rewriteable and having a program area and a program memory area (PMA), the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the rewritable optical disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA in response to the erase command;

detecting where the frames containing the identification information are located at a leading section of the PMA and the frames containing the track information are located in a subsequent section of the PMA after the leading section;

deleting all of the frames which contain the track information from the PMA, thereby logically erasing all of the contents from the program area;

preserving the frames which contain the identification information as they are at the leading section of the PMA, so that the rewritable optical disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the rewritable optical disc; and

deleting the frames containing the identification information instead of preserving the frames containing the identification information when the identification information is incapable of identifying the rewritable optical disc.

9. (Canceled)

10. (Canceled)

11. (Canceled)

12. (Previously Presented) A method of logically erasing contents of a rewritable optical disc in response to an erase command, the rewritable optical disc being optically

rewriteable and having a program area and a program memory area (PMA), the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the rewritable optical disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA in response to the erase command;

detecting where first frames containing the identification information are located at a part of a leading section of the PMA and where second frames containing the track information are located after the first frames in the PMA;

deleting all of the second frames so as to logically erase all of the contents from the program area;

preserving the first frames in the leading section of the PMA while filling the leading section by the first frames to complete the leading section, so that the rewritable optical disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the rewritable optical disc; and

deleting the frames containing the identification information instead of preserving the frames containing the identification information when the identification information is incapable of identifying the rewritable optical disc.

13. (Canceled)

14. (Previously Presented) A method of logically erasing contents of a rewritable optical disc in response to an erase command, the rewritable optical disc being optically rewriteable and having a program area and a program memory area (PMA), the program area being recorded with the contents as tracks, the PMA being divided into a leading section and

subsequent sections and being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the rewritable optical disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA in response to the erase command;

detecting where first frames containing the identification information are located at one of the subsequent sections of the PMA and where second frames containing the track information are located in either of the leading section and the subsequent sections except for that containing the first frames;

deleting all of the second frames so as to logically erase all of the contents from the program area; and

preserving the first frames in the leading section of the PMA by copying the first frames from the subsequent sections to the leading section while deleting the first frames from the subsequent sections, so that the rewritable optical disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the rewritable optical disc.

15. (Previously Presented) The method according to claim 14, wherein the PMA is divided into sections by every ten number of frames, and wherein the step of preserving comprises reserving a ten number of frames which contain the identification information into the leading section of the PMA so as to fill the leading section.

16. (Previously Presented) The method according to claim 14, further comprising the step of deleting the frames containing the identification information instead of the step of

preserving the frames containing the identification information when the identification information is incapable of identifying the rewritable optical disc.

17. (Previously Presented) The method according to claim 14, wherein the step of preserving comprises detecting when the identification information is composed of a code incapable of identifying the rewritable optical disc, and then rewriting the identification information from the code incapable of identifying the rewritable optical disc to a code capable of identifying the rewritable optical disc.

18. (Previously Presented) A method of logically erasing contents of a rewritable optical disc having a program area and a program memory area (PMA) in response to an erase command, the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing track information for indicating the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the rewritable optical disc, the method comprising:

accessing the PMA in response to the erase command effective to command an erase of a last track from the program area;

detecting where frames containing the identification information are located at a succeeding section of the PMA after a preceding section of the PMA containing frames corresponding to the last track;

deleting the frames corresponding to the last track from the preceding section so as to logically erase the contents of the last track from the program area; and

preserving the frames containing the identification information in the preceding section of the PMA by copying the frames containing the identification information from

the succeeding section while deleting the frames containing the identification information from the succeeding section.

19. (Previously Presented) The method according to claim 18, wherein the PMA is divided into sections by every ten number of frames, and wherein the step of preserving comprises reserving a ten number of frames which contain the identification information into the preceding section of the PMA so as to fill the preceding section.

20. (Previously Presented) The method according to claim 18, further comprising the step of deleting the frames containing the identification information instead of the step of preserving the frames containing the identification information when the identification information is incapable of identifying the rewritable optical disc.

21. (Previously Presented) The method according to claim 18, wherein the step of preserving comprises detecting when the identification information is composed of a code incapable of identifying the rewritable optical disc, and then rewriting the identification information from the code incapable of identifying the rewritable optical disc to a code capable of identifying the rewritable optical disc.

22. (Previously Presented) A method of logically erasing contents of a rewritable optical disc having a program area and a program memory area (PMA) in response to an erase command, the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing track information for indicating the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the rewritable optical disc, the PMA being divided into sections by every ten number of frames, the method comprising:

accessing the PMA in response to the erase command effective to command an erase of a last track from the program area;

detecting where a five number of frames containing the identification information are located at a section of the PMA and where another five number of frames corresponding to the last track are located in the section of the PMA;

deleting the five number of the frames corresponding to the last track from the section so as to logically erase the contents of the last track from the program area; and

preserving a ten number of the frames containing the identification information in the section by duplicating the five number of the frames containing the identification information.

23. (Previously Presented) The method according to claim 22, further comprising the step of deleting the frames containing the identification information instead of the step of preserving the frames containing the identification information when the identification information is incapable of identifying the rewritable optical disc.

24. (Previously Presented) The method according to claim 22, wherein the step of preserving comprises detecting when the identification information is composed of a code incapable of identifying the rewritable optical disc, and then rewriting the identification information from the code incapable of identifying the rewritable optical disc to a code capable of identifying the rewritable optical disc.

25. (Previously Presented) A method of logically erasing contents of a rewritable optical disc having a program area and a program memory area (PMA) in response to an erase command, the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing track information for indicating

the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the rewritable optical disc, the PMA being divided into sections by every ten number of frames, the method comprising:

accessing the PMA in response to the erase command effective to command an erase of a last track from the program area;

detecting where a five number of frames corresponding to the last track are located in a preceding section and another five number of frames corresponding to a track next to the last track are located in the preceding section, and a ten number of frames containing the identification information are located at a succeeding section of the PMA after the preceding section;

deleting the five number of the frames corresponding to the last track from the preceding section so as to logically erase the contents of the last track from the program area;

preserving a ten number of the frames corresponding to a track next to the last track in the preceding section by duplicating the five number of the frames corresponding to the track next to the last track; and

preserving the ten number of the frames containing the identification information in the succeeding section as they are.

26. (Previously presented) The method according to claim 25, comprising the step of deleting the frames containing the identification information instead of the step of preserving the frames containing the identification information when the identification information is incapable of identifying the rewritable optical disc.

27. (Previously Presented) The method according to claim 25, wherein the step of preserving comprises detecting when the identification information is composed of a code incapable of identifying the rewritable optical disc, and then rewriting the identification information from the code incapable of identifying the rewritable optical disc to a code capable of identifying the rewritable optical disc.

28. (Canceled)

29. (Previously Presented) An apparatus for logically erasing contents of a rewritable optical disc, comprising:

a mount that mounts the rewritable optical disc having a program area and a program memory area (PMA), the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing track information for indicating the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the rewritable optical disc;

an input that inputs an erase command effective to command an erase of a last track from the program area;

a pickup that accesses the PMA in response to the erase command; and

a controller that controls the pickup to perform a process including:

detecting where the frames containing the identification information are located at a succeeding section of the PMA after a preceding section of the PMA containing the frames corresponding to the last track;

deleting the frames corresponding to the last track from the preceding section so as to logically erase the contents of the last track from the program area; and

preserving the frames containing the identification information in the preceding section of the PMA by copying the frames containing the identification information from the succeeding section while deleting the frames containing the identification information from the succeeding section.

30. (Canceled)

31. (Previously Presented) A machine readable medium for use in an apparatus having a processor for logically erasing contents of a rewritable optical disc having a program area and a program memory area (PMA) in response to an erase command, the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing track information for indicating the tracks of the contents recorded in the program area and another kind of frames containing identification information for identifying the rewritable optical disc, program code stored on the machine readable medium includes instructions to:

access the PMA in response to the erase command effective to command an erase of a last track from the program area;

detect where the frames containing the identification information are located at a succeeding section of the PMA after a preceding section of the PMA containing frames corresponding to the last track;

delete the frames corresponding to the last track from the preceding section so as to logically erase the contents of the last track from the program area; and

preserve the frames containing the identification information in the preceding section of the PMA by copying the frames containing the identification information from the succeeding section while deleting the frames containing the

identification information from the succeeding section.

32. (Previously Presented) A method of logically erasing contents of a rewritable optical disc in response to an erase command, the rewritable optical disc being optically rewriteable and having a program area and a program memory area (PMA), the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the rewritable optical disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA in response to the erase command;

detecting and deleting all of the frames containing the track information from the PMA, thereby logically erasing all of the contents from the program area; and

preserving the frames containing the identification information in the PMA, so that the rewritable optical disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the rewritable optical disc, wherein the frames containing the identification information are erasable from the PMA and rewritable to the PMA such that during a first mode the frames containing the identification information are erased from a first position of the PMA and are then rewritten to the first position of the PMA.

33. (Previously Presented) A method of logically erasing contents of a rewritable optical disc in response to an erase command, the rewritable optical disc being optically rewriteable and having a program area and a program memory area (PMA), the program area being recorded with the contents as tracks, the PMA being recorded with at least two kinds of frames, one kind of frames containing identification information for identifying the rewritable

optical disc and another kind of frames containing track information for indicating the tracks of the contents recorded in the program area, the method comprising:

accessing the PMA in response to the erase command;

detecting and deleting all of the frames containing the track information from the PMA, thereby logically erasing all of the contents from the program area; and

preserving the frames containing the identification information in the PMA, so that the rewritable optical disc can be identified at rewriting thereof even after all of the contents are logically erased from the program area of the rewritable optical disc, wherein the frames containing the identification information are erasable from the PMA and rewritable to the PMA such that during a second mode the frames containing the identification information are erased from the first position of the PMA and are then rewritten to a second position of the PMA, the second position being different than the first position.

34-37 (Canceled)

38. (Previously Presented) The method according to claim 14, further including a first mode during which the frames containing the identification information are erased from a first position of the PMA and are then rewritten to the first position of the PMA.

39. (Previously Presented) The method according to claim 38, further including a second mode during which the frames containing the identification information are erased from the first position of the PMA and are then rewritten to a second position of the PMA, the second position being different than the first position.

40-43 (Canceled)

44. (Previously Presented) The method according to claim 1, wherein the PMA is divided into sections by every ten number of frames, and wherein the step of preserving comprises reserving a ten number of frames which contain the identification information into a predetermined section of the PMA so as to fill the predetermined section.

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